

or plant growth hormone be applied in an amount effective to inhibit growth of harmful organisms causing the disease, but also in an amount insufficient to negatively effect growth of the plant tissues. That limitation is found in each of independent Claims 1, 25 and 28.

Claims 33-59 are directed to methods for inhibiting the infestation of plants by insects and their larvae by applying an auxin (Claims 33-50 and 54-59) or a plant growth hormone, precursor or conjugate (Claims 51-53) to specific plant parts after planting or to seeds or tubers before planting. Again, because such compounds may result in uncontrolled growth and death of plants, in order to achieve the desired results, it is critical that the auxin or plant growth hormone be applied in an amount effective to inhibit infestation by the insects and their larvae, but also in an amount insufficient to negatively effect growth of the plant tissues. That limitation is found in each of the independent Claims 33, 51 and 54.

Finally, Claims 60-70 are directed to seeds and seed pieces that have been treated with an auxin (Claims 60-67) or a plant growth hormone (Claims 68-79) to produce plants having enhanced resistance to disease. Again, because such compounds may result in uncontrolled growth and death of plants, in order to achieve the desired results, it is critical that the auxin or plant growth hormone be present on the seed or seed piece in an amount effective to inhibit growth of harmful organisms, but also in an amount insufficient to negatively effect growth of the emerging plant tissues. That limitation is found in each of the independent Claims 60 and 68.

None of the prior art cited in the present Office Action, including the Fredrick patent (United States Patent No. 4,675,327) directed to improved embalming fluids or Chinese Patent Publication No. 1,262,037 directed to a new

application of plant auxin recognizes this critical feature necessary for the effective use of auxins or other plant growth hormones to inhibit disease pathogens and insect pests and their larvae from attacking plant tissue. Further, none of the cited prior art discloses or suggests the claimed seeds treated with the specified auxins or plant growth hormone as disclosed and claimed herein. Accordingly, the claims as presented distinguish over the prior art and should be allowed.

I. THE REJECTION

The Obviousness Rejection

Claims 1-70 have been rejected as obvious under 35 U.S.C. § 103(a) over the disclosure in either the Fredrick patent or the Chinese patent publication. It is asserted in the Office Action that the Fredrick patent teaches anti-microbial embalming fluids comprising the synergistic combination of a disinfectant and a plant hormone or plant growth regulator (citing to columns 2-3 of Fredrick). The Action further asserts that the auxinic hormone NAA is shown by Example 6 of the Fredrick patent to have effective anti-microbial properties. Next, the Action asserts that the Chinese patent publication teaches that plant auxins are known anti-bacterial and anti-viral agents.

From these teachings, the Examiner concludes that it would have been obvious to the ordinary artisan at the time of the invention to have used plant hormones such as auxins as anti-microbial agents to inhibit plant pathogens. Finally, the Examiner concludes that inhibition of insect infestation would have been expected once such anti-microbial activity was known.

II. THE RESPONSE

A. The Prior Art

It is important to recognize that the Fredrick patent is directed to improved embalming fluids characterized by lower toxicity and lower levels of noxious fumes. Fredrick discloses that, by combining a small amount of a plant growth regulating compound with a conventional disinfectant, a synergistic effect seemed to be achieved. Thus, Fredrick asserts that acceptable results were achieved with lower concentrations of toxic chemicals and reduced noxious fumes. Fredrick, however, employs conventional disinfectants in each and every composition he discloses. See the laundry list of disinfectants disclosed at column 2, lines 8-65 of the Fredrick patent. The examples given by Fredrick all employ such conventional disinfectants, including ammonium((5-hydroxy-4-oxo-4H-pyran-2-yl)methyl)dimethyl tetradecyl chloride, ortho-phenylphenol and formaldehyde. In fact, Fredrick declares that the conventional disinfectants, formaldehyde and the quaternary ammonium compounds, are preferred.

Fredrick discloses an embalming fluid including a conventional disinfectant, preferably formaldehyde, for use in preserving dead bodies and preventing growth of bacteria and fungi. Thus, the deleterious effect on living plants of higher concentrations of auxins and/or other plant growth regulators was not a concern of Fredrick. Fredrick already had a dead body and he wanted to inhibit the growth of bacteria and fungi. Fredrick had no interest in ensuring that any tissue treated with his compounds continued to grow. Thus, Fredrick neither disclosed or suggested that auxins or other plant growth regulators could be effectively used to inhibit the growth of plant pathogens or pests, while not negatively effecting the

growth of the treated plant tissue. Fredrick neither disclosed nor even recognized this critical factor.

The cited abstract from the Chinese patent publication merely suggests that auxins may be used to eliminate bacteria and viruses from plants. The Chinese reference, however, provides no details of methods useful for inhibiting growth and attack by plant pathogens or infestation by insect pests by treating the plant tissues with auxins or plant growth regulators at a level sufficient to achieve the desired result but insufficient to cause negative effect on the plant tissues. In fact, nothing in the Chinese abstract suggests that auxins or plant growth regulators will have any effect on plant damaging insects and their larvae as discovered and claimed by Applicant herein.

Thus, the claims of the captioned application are not obvious in view of the embalming fluids of Fredrick nor the disclosures of the Chinese patent publication.

B. Independent Claims

Claims 1, 25, 28, 33, 51, 54, 60 and 68, all of the independent claims in the application include the limitation that the auxin or plant growth hormone be present in an amount sufficient to produce the desired result of inhibiting growth of plant pathogens or infestation by insects and their larvae. Critically, however, each of these claims also requires that the auxin or plant growth regulator be present in an amount insufficient to negatively effect the growth of the treated plant tissue. That limitation is neither disclosed nor suggested in the Fredrick patent (in Fredrick the body was already dead and the goal was to kill any bacteria or fungi) or in the abstract of the Chinese patent publication. Accordingly, the independent claims, and all claims depending therefrom, distinguish over the prior art and should be allowed.

C. The Dependent Claims

Having demonstrated that all of the independent claims are allowable, it is unnecessary to address the dependent claims which are also allowable. Without addressing all of the dependent claims, however, Applicant wishes to take this opportunity to point out further distinguishing limitations in several of those claims which are neither disclosed nor suggested by the cited references.

Dependent Claims 15-17, 46-47 and 58 all provide that the auxin or plant growth regulator is applied along with a metal selected from the alkaline earth metals, the transition metals, boron and mixtures thereof. None of the cited prior art references discloses or suggests such a combination.

Dependent Claims 23-24 provide that the auxin is encapsulated with a biologically compatible carrier to permit slow release of the active auxin. None of the cited prior art references discloses or suggests such an application method.

Dependent Claims 8-13, 30, 40-42, 56 and 63-65 all specify application ranges for the auxin or plant growth hormone. These ranges provide the required concentration to produce the desired inhibition in growth of plant pathogens or infestation by insects and their larvae, while not negatively effecting growth of the tissues of the treated plants. None of the cited prior art references discloses or suggests these ranges.

Thus, additional reasons exist that distinguish at least these claims over the disclosures of the cited prior art references.

III. THE CONCLUSION

In view of the above remarks, favorable consideration of Claims 1-70 now pending in the application is requested. It is believed that independent Claims 1, 25, 28, 33, 51, 54, 60 and 68, together with all of the remaining claims depending

therefrom, are allowable. All claims being allowable, Applicant submits that this case should be promptly passed to issue.

No additional claims fees are required with this Amendment. If, however, any fees are required with the application, the Commissioner is authorized to charge any required fees to Deposit Account No. 29-2112. This authorization is provided in duplicate on the accompanying transmittal letter.

If the Examiner considers that a telephone conference would expedite allowance, he is urged to contact the undersigned at (713) 227-8008.

Respectfully submitted,



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